Space Weather Forecast

Issued on Tuesday, 31 January 2023 at 01:19 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Minor Geomagnetic Storm G1 on 31 January, with declining risk through the period. Slight chance of Moderate flares throughout.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity has been Low, with only low energy Common-class flares observed. There are five sunspot regions on the visible disc, three in the western hemisphere and two in the east, with four of these bipolar and one, a unipolar region. There are a number of bright regions just beyond the eastern limb which are being monitored for potential activity. A number of CMEs emanating from the southwest quadrant have been observed, but are not forecast to affect the Earth.

Solar Wind / Geomagnetic Activity: The solar wind initially followed a declining pattern as the Earth left the influence of a fast wind regime, but has entered a further fast wind towards the end of the period, with speeds reaching mainly slightly elevated levels. Associated total magnetic field strength was initially steady, but showed a fitfully increasing trend towards the end of the period, reaching moderate levels. The north-south component was generally neutral, but varied between weakly positive and weakly negative levels during the onset of the fast solar wind. Geomagnetic activity was mainly Quiet, with one Unsettled interval at the end of the period.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.
Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be predominantly Low, with no significantly active regions on, or due to rotate onto the visible disc, with a slight chance of isolated M-class flares.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs are forecast in the next four days. A current fast solar wind is expected to give speeds of 400-500km/s through much of the period, with a declining trend towards the end of the period as the fast wind eases. Geomagnetic activity is expected to start Unsettled, with a risk of Active or G1/Minor Storm periods, this risk declining as the period progresses.

Energetic Particles / Solar Radiation: No solar radiations storms are expected given the relative lack of complex sunspots on the Sun at present.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	20	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	10	10	10	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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